PSYCHE.

THE MOUTHPARTS OF THE NEMATOCEROUS DIPTERA, IV.

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CULICIDAE.

Corethra sp. The mouthparts are of the short, usual Nematocerous type. The *labrum-epipharynx* (fig. 8 A, *l. ep.*) is strongly convex above, well chitinized, and pointed. *Mandibles* are wanting. The *maxillae* (fig. 8 A, *mx*) have long 4-segmented palpi rising from a palpifer, and a short, delicate, very rudimentary lobe. The *labium* (fig. 8 A, *li*) has an elongate rectangular basal sclerite and three short terminal lobes, the outer ones, the paraglossae, being more strongly chitinized than the inner median one, the fused glossae. The *hypopharynx* (fig. 8 A, *hyp*) is narrow and tapering, and finely fringed at apex.

I have examined also the mouthparts of pupae of *Corethra*, but the pupae were too nearly mature to present any instructive differences in mouthparts conditions.

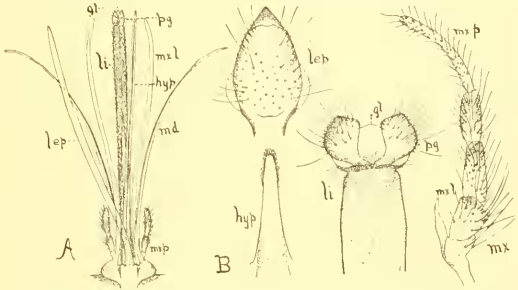

Fig. 8, A. Mouthparts of Culex sp.: *l. ep.*, labrum-epipharynx, *md.*, mandible, *mx.*, maxilla, *mx. l.*, maxillar lobe, *mx. p.*, maxillar palpus, *li.* labium *gl.* glossa, *pg.* paraglossa, *hyp.*, hypopharynx; B, Mouthparts of Corethra sp., same lettering.

Culex sp. The well-known mouthparts of *Culex* are markedly different

from those of *Corethra*. The mouthparts are very much elongated to form the long, slender, sucking proboscis. The females (fig. 8 B) which are blood sucking possess mandibles. The *labrum-epipharynx* (fig. 8 B, *l. ep.*) the *mandibles* (fig. 8 B, *md*) *maxillar lobes* (fig. 8 B, *mx. l.*) and *hypopharynx* (fig. 8 B, *hyp*) appear as long, slender pointed piercing stylets, which lie almost completely enclosed in the equally long, slender *lubium* (fig. 8 B, *li*) whose lateral margins turn up and in so as to form a sheath, opening along the median dorsal line, for the stylets. The distal extremity of the labium is divided into three parts, representing the greatly reduced terminal lobes, paraglossae and fused glossae. Thus it is

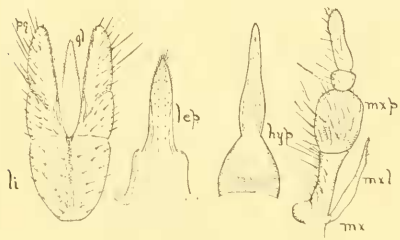

Fig. 9, Mouthparts of Rhyphus sp.: *l. ep.* labrum-epipharynx, *mx.* maxilla, *mx. l.* maxillar lobe, *mx. p.* maxillar palpus, *li.* labium, *pg.* paraglossa, *gl.* glossa, *hyp* hypopharynx.

the basal labial sclerite which is so elongated and which forms the sheath for the remaining mouth parts. The maxillary palpi are short (comparatively) and only 3-segmented. The mandibles are finely serrate on the distal part of their inner margin.

The mouthparts of the male form a long, slender, proboscis-like organ, but there are no mandibles and the maxillar lobes are short and very delicate. The maxillar palpi are as long as or longer than the labium and are 4-segmented, the second segment being especially long. The labrum-epipharynx, hypopharynx and labium are as in the female.

Rhyphidae.

Rhyphus sp. *Rhyphus* has no mandibles, in female or male. The *labrum-epipharynx* (fig. 9, *l. ep.*) is elongate, triangular, pointed at apex, and bears a number of taste pits (?) on its under (inner) or epipharygngeal surface. The *maxillae* (fig. 9, *mx*) present a delicate, flattened, membranous, rather long lobe, and 4-segmented palpi. The *labium* (fig. 9, *li*) shows an interesting condition: the basal sclerite has a median longitudinal line, and there are three terminal lobes; the outer or paraglossae are 2-segmented and the narrower, pointed, median one, representing the fused glossae, is nearly as long as the paraglossae and free for its whole length. The *hypopharynx* (fig. 9, *hyp*) is especially well chitinized: it is sharp pointed, and the pharyngeal skeleton at its base is well developed.

Bibionidae.

Bibio sp. *Bibio* sp. presents a similar

condition in males and females. Mandibles are wanting. The labrum-epipharynx (fig. 10 *l. ep.*) shows readily its composition of two parts; a labrum which has a bifid apex projecting beyond the epipharynx which bears a number of taste-pits (?) and is single pointed. The maxillae (fig. 10 *mx*) are strongly chitinized and consist of basal sclerite and five-segmented palpus (the basal segment is short and small, but appears to

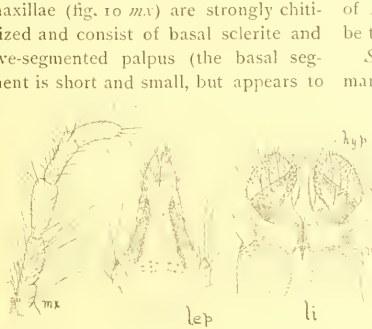

Fig. 10, Mouthparts of Bibio sp; *l. ep.* labrum-epipharynx, *mx.* maxilla, *li.* labium, *pg.* paraglossa, *hyp.* hypopharynx.

be a palpar segment rather than a palpifer). There is no maxillar lobe, unless a short well-chitinized spur (not shown in the figure) which lies interior to the palpus is a rudiment of the lobe. The labium (fig. 10 *li*) is short and broad presenting two well-developed, free paraglossae but no glossa. The paraglossae are fleshy and concave internally with infolded margins, and provided with numerous hairs and peculiar little rugose spaces. No pseudotracheae are visible. The hypopharynx (fig. 10 *hyp*) is well-developed, extending to the tip of the paraglossae and unusually strongly-chitinized.

Dilophus sp. A female of *Dilophus* sp. examined shows essentially the same mouthparts condition as *Bibio*. That part of the maxilla called basal segment of the palpus, in the description of *Bibio*, appears in *Dilophus* rather to be the palpifer.

Scatopse sp. In *Scatopse* sp. a remarkable degree of specialization is shown in the great reduction of the maxillary palpi. The palpi are composed of but one segment, which is borne by a slender, well-chitinized basal maxillar sclerite. The palpar segment is peculiarly pitted, and the inner surface of the segment is concave; in each of the pits or depressed spaces, there is a number of delicate short papillar processes. This reduction of the palpus to a single segment is not elsewhere shown (to my knowledge) among the Nematocera although it is the characteristic condition among the more specialized Brachycera. The labrum-epipharynx, labium and hypopharynx are present in *Scatopse* and in no essentially different condition from that of *Bibio*. The paraglossae of the labium are rather long and slender and with a strongly chitinized supporting basal part.

Tipulidae.

In this largest of the Nematocerous families we have a considerable variety of mouthparts conditions, and in the

conditions presented by the labium especially we find an extremely instructive series.

Symplecta punctipennis. This Tipulid presents mouthparts of the usual Nematocerous type, although of a specialized condition of that general type. This specialization is shown in the absence of mandibles and the reduction of the maxillar lobe to a minute, hardly chitinized rudiment. The *labrum-epipharynx* is rather short, and with chitinized skeletal frame work. The *maxillar palpi* are long, 4-segmented and borne on a short palpifer. The *hypopharynx* is slender, with pointed fringed apex. The *labium* (fig. 11 S, *li*) is composed of a narrow well-chitinized basal sclerite with free paraglossae which are rather thick, with concave inner faces and bear numerous short strong hairs, and many short fine prickly hairs. A glossa is not visible. There are no pseudotracheae.

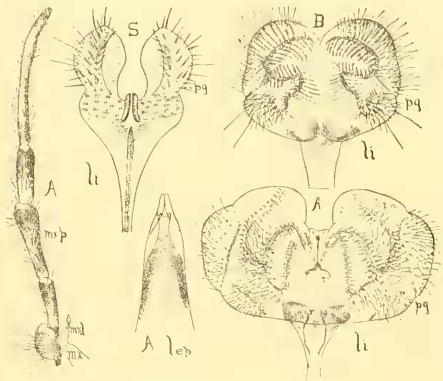

Fig. 11, A, Mouthparts of Holorusia rubiginosa, *l.ep.* labrum-epipharynx, *mx.* maxilla, *mx.l.* maxillar lobe, *mx.p.* maxillar palpus, *li.* labium, *pg.* paraglossa; B, Labium of Tipula sp., *pg.* paraglossa; S, Labium of Symplecta punctipennis, *pg.* paraglossa.

Dicranoptycha sp. Here we meet a condition similiar to that shown by *Symplecta*. The maxillar lobe is better developed, being a distinct, spoon-shaped, weakly chitinized plate. The labium has free paraglossae, fleshy, with concave inner faces, and without sign of pseudotracheae.

Holorusia rubiginosa. In this giant Tipulid, we find a specialization in the mouthparts over the conditions presented by *Symplecta* and *Diccanoptycha* shown especially, and most suggestively, in the character of the labium. The basal sclerite of the *labium* (fig. 11 A, *li*) is very narrow and slender although well chitinized anteriorly, and the paraglossae are no longer free but are fused for two-thirds of their length, forming a single large flat (though rather thick and fleshy) plate, in which a few conspicuous main pseudo-tracheal trunks, and numerous very delicate and inconspicuous small transversal pseudo-tracheae are visible. The *maxillae* (fig. 11 A, *mx*) have only a minute, membranous vestige of a lobe; the

palpus, borne on a distinct, swollen, palpifer, is long and 4-segmented. The *labrum-epipharynx* (fig. 11 A, *l.ep.*) is short and well chitinized. The *hypopharynx* is short and pointed.

Stygeropis sp. This genus has the mouthparts in the same general condition as *Holorusia*. The maxillae however present no trace of lobes. The paraglossae of the labium are fused for about half their length, are heavily chitinized at the outer margins and have pseudo-tracheae, of the character of those in *Holorusia*, namely a few large main trunks, and numerous small, inconspicuous, delicate, transversal ones.

Tipula sp. In *Tipula* (fig. 11, B, *li*) the fusion of the paraglossae extends farther and the system of pseudo-tracheae is better developed, the transversal ones being larger and more distinct than in *Holorusia*.

The mouthparts of the Tipulidae are borne at the anterior extremity of an anterior prolongation of the head capsule. The mouthparts themselves are not elongated; the maxillary palpi, however, are especially longer and slender.

A NEW LITHOSIAN.

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Ozodania *n. gen.* — Head prominent, tongue distinct, coiled; male antennae simple; no ocelli. Palpi slender, upturned, reaching to middle of front; legs moderate, hind tibiae with four spurs. Fore wings slightly over twice as long as broad; 12 veins, 7 to 9 stalked, the rest from the cell; hind wings with vein 2 remote from 3 the rest evenly spaced, 6 and 7 stalked, 8 joining the subcostal for two-thirds the length of the cell; outer margin excavate, the anal angle produced; anal hairs of male conspicuous but not reaching the end of the body.

Type the following: —

Ozodania schwarziorum n. sp. — Fore wing blackish lead color, a broad upright orange yellow band resting on the lobe at inner angle where the color becomes crimson; a similar stripe along internal margin, scarcely attaining the upright band, touched with crimson at base. Hind wings reddish pink, costal margin yellowish, a minute or distinct leaden apical band. Thorax gray; vertex of head, collar and patagia orange yellow abdomen pinkish red; legs gray and yellowish. Wings below with the gray ground color more or less replaced by reddish. In the Arizona specimen the gray parts are as on the upper side, but the pale parts red and broader; in the Mexican specimen the gray is reduced to a small apical and basal patch on fore wings and is absent on hind wings. Expanse 16 mm.

Two males, Oracle, Arizona (E. A. Schwarz); Rancho Hannover, State of Vera Cruz, Mexico (H. Schwarz). U. S. National Museum, type number 4102.

This genus stands between Cisthene and Odozana. From the former it differs in the form of the hind wings and a slight enlargement on the outer angle of fore wings; from the latter, in the very slight development of the anal hairs and in the longer palpi (Walker says those of *Odozana* are porrect and do not exceed the head).

This species must have been taken in